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EXAMINER

ZEC, FILIP

ART UNIT

PAPER NUMBER

3744

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/771,971

Applicant(s)

KORIN, AMOS

Examiner

Filip Zec

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 37, 40-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,843,209 to Ray et al., in view of U.S. Patent 4,786,301 to Rhodes. Ray discloses applicant's basic inventive concept, a system for pumping thermal energy (FIG. 7), comprising a gas-fluid contactor (Vapor Permeation Module) for adding vapor from a liquid (Fluid Feed Stream) to a process gas (Sweep Stream) to produce a vapor containing gas (Permeate Stream Vapor B-rich) and a membrane permeator (Membrane Separation Unit) for removing said vapor from said vapor containing gas, providing a resultant vapor (Vapor B-rich Stream), wherein said vapor permeates from a feed side of said membrane permeator to a permeate side of said membrane permeator (col 2, lines 5-20) and sweeping a dry gas proximate to said permeate side to increase the driving source between said feed side and said permeate side (col 2, lines 20-30), producing a retentate gas (Retentate Stream Vapor B-poor), a portion of said retentate gas being refluxed into said permeate side (col 2, lines 33-35), substantially as claimed with the exception of stating that the feed fluid is a liquid, heated by a solar heater prior to entering the contactor and, indirectly, transferring thermal energy to the resultant vapor. Rhodes shows a heated liquid (stored in hot tank 65, FIG. 3), heated via solar heat exchanger (68, FIG. 3), and used as an

Art Unit: 3744

absorbent in a gas liquid contactor (50, FIG. 3) to be old in vapor permeating art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Rhodes to modify the system of Ray, by using heated liquid instead of a mixed vapor fluid in order to improve the regeneration temperature of the contactor and thus, the thermal capacity of the system (col 6, lines 9-29).

3. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,843,209 to Ray et al., in view of U.S. Patent 4,786,301 to Rhodes, as applied to claim 37 above, and further in view of U.S. Patent 5,255,528 to Dao. Ray in view of Rhodes discloses applicant's basic inventive concept, a system for pumping thermal energy, substantially as claimed with the exception of stating that the resultant vapor is further routed through a heat exchanger for heating a media by condensation, where the latent heat is released. Dao shows heat exchanger (40", FIG. 3) for heating a media by condensation, where the latent heat is released using hot vapor (46) to be old in the absorption art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Dao to modify the system of Ray in view of Rhodes, by further using the resultant vapor as a heating fluid, where the latent heat is released in order to lessen the COP loss of the system by recuperating the excess thermal energy of the boiling fluid (col 6, lines 9-20).

4. Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,843,209 to Ray et al., in view of U.S. Patent 4,786,301 to Rhodes, as applied to claim 37 above, and further in view of U.S. Patent 5,873,260 to Linhardt et al. Ray in view of Rhodes discloses applicant's basic inventive concept, a system for pumping thermal energy, substantially as claimed with the exception of stating that the vapor containing gas exchanges heat with the

Art Unit: 3744

liquid prior to entering the contactor and that the liquid exchanges heat with the process gas after it exits the contactor. Linhardt shows a heat exchanger (16, FIG. 1) wherein heat is exchanged between the vapor containing gas and the liquid prior to entering the contactor and another heat exchanger (30, FIG. 3) wherein heat is exchanged between the process gas and the liquid after exiting the contactor to be old in the absorption art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Linhardt to modify the system of Ray in view of Rhodes, by precooling the liquid and the process gas prior to entering the contactor in order to improve the efficiency of the absorbing process (col 2, lines 20-23; col 4, lines 46-52).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 37-46 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-26 of U.S. Patent No. 6,539,728. Although the conflicting claims are not identical, they are not patentably distinct from each other because they teach the same invention, namely a heat pump system comprising: a membrane permeator

Art Unit: 3744

having a permselective membrane capable of selectively removing vapor from a vapor-containing gas to yield a dry gas, a heat pump having (a) an internal side for exchanging thermal energy with a process fluid, (b) an external side for exchanging thermal energy with an external environment, and (c) a thermodynamic mechanism for pumping thermal energy between said internal side and said external side in either direction, means for conveying said vapor-containing gas into said membrane permeator and means for routing said dry gas to either of said internal side or said external side.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,775,121 to Kuma, Toshimi et al. teaches a method and device for refrigerating a fluid.

U.S. Patent 5,881,574 to Petrich, Elso teaches an apparatus and method for contacting a gaseous phase with a liquid phase.

U.S. Patent 6,059,857 to Ray, Roderick J. et al. teaches ultrapurification of organic solvents.

Art Unit: 3744

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is (571) 272-4815. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (571) 272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Filip Zec
Examiner
Art Unit 3744


CHERYL TYLER
SUPERVISORY PATENT EXAMINER

FZ